

# FCC TEST REPORT

For

**Handheld Data Terminal**

**Model Number: V5000, RX-V5**

**FCC ID: SWSV5000**

**Report Number : WT13803684**

Test Laboratory : Shenzhen Academy of Metrology and Quality  
Inspection  
National Digital Electronic Product Testing Center  
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## TEST REPORT DECLARATION

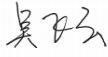
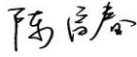

Applicant	:	Shenzhen Urovo Technology Co.,Ltd
Address	:	A7, Zondy Cyber Building, Nanshan, Shenzhen, China
Manufacturer	:	Shenzhen Urovo Technology Co.,Ltd
Address	:	A7, Zondy Cyber Building, Nanshan, Shenzhen, China
EUT Description	:	Handheld Data Terminal
Model No	:	V5000, RX-V5
Trade mark	:	UROVO
Serial Number	:	W5221309026323 W5221309026324
FCC ID	:	<b>SWSV5000</b>

Test Standards:

**FCC Part 15 Subpart B 15.107, 15.109 (2012)**

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results.

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

Project Engineer:	 <hr style="width: 100%; border: 0.5px solid black;"/> (Wu Feiyun)	Date:	Nov.4,2013 <hr style="width: 100%; border: 0.5px solid black;"/>
Checked by:	 <hr style="width: 100%; border: 0.5px solid black;"/> (Chen QiChun)	Date:	Nov.4,2013 <hr style="width: 100%; border: 0.5px solid black;"/>
Approved by:	 <hr style="width: 100%; border: 0.5px solid black;"/> (Lin Bin)	Date:	Nov.4,2013 <hr style="width: 100%; border: 0.5px solid black;"/>

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## 1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	FCC Rules	Test Results
Conducted Disturbance	15.107	Pass
Radiation Emission	15.109	Pass

Remark: "N/A" means "Not applicable."

## 2. GENERAL INFORMATION

### 2.1. Report information

- 2.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.
- 2.1.2. The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.
- 2.1.3. Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

### 2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at Bldg. of Metrology & Quality Inspection, Longzhu Road, Nanshan District, Shenzhen, Guangdong, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Committee for Laboratories (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is L0579.

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number are 446246 806614 994606(semi anechoic chamber).

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is IC4174.

TUV Rhineland accredits the Laboratory for conformance to IEC and EN standards, the registration number is E2024086Z02.

Measurement Uncertainty

### 2.3. Measurement Uncertainty

Conducted Emission

9kHz~30MHz 3.5dB

Radiated Emission

30MHz~1000MHz 4.5dB

1GHz~18GHz 4.6dB

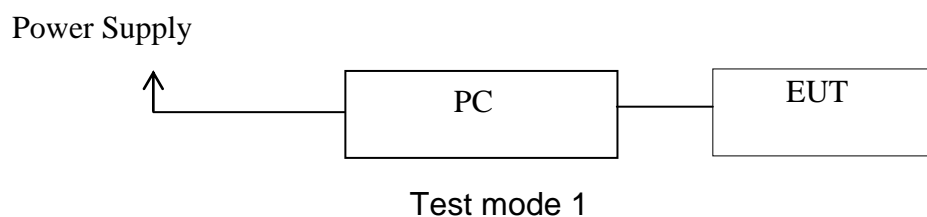
### 3. PRODUCT DESCRIPTION

#### 3.1.EUT Description

Table 2 Specification of the Equipment under Test

Product Type:	Handheld Data Terminal
Hardware Revision :	SQ35
Software Revision :	Full_smdkv210-eng 2.3.1 GINGERBREAD eng.urovo.20130221.140926 test-keys
FCC-ID:	SWSV5000
Frequency:	GSM 850: 824.2-848.8MHz; PCS 1900: 1850.2-1909.8MHz FDD V: 826.4-846.6MHz; FDD II: 1852.4-1907.6MHz Bluetooth: 2402-2480MHz WIFI: 2412-2462MHz
Type(s) of Modulation:	GSM: GMSK; 8PSK, WCDMA: QPSK WIFI: DSSS, OFDM Bluetooth: GFSK, $\pi/4$ -DQPSK, 8-DPSK
Antenna Type:	Internal
Operating voltage:	Internal battery, 110V AC Adapter; 3.4V (Low)/ 3.8V (Nominal)/ 4.2V (Max)

#### 3.2.Block Diagram of EUT Configuration



### 3.3. Operating Condition of EUT

Test mode 1: Connect to PC

### 3.4. Support Equipment List

Name	Model No	S/N	Manufacturer
Computer	9439	L3BDF2K	Lenovo
Keyboard (USB)	SK-8825 (L)	02553778	Lenovo
Mouse (USB)	MO28UOL	4418011108	Lenovo
Monitor	9227-AE1	V1TDB38	Lenovo

### 3.5. Test Conditions

Date of test : Oct 16-Oct 29, 2013

Date of EUT Receive : Oct 12, 2013

Temperature: 23-24 °C

Relative Humidity: 53-56%

### 3.6. Modifications

No modification was made.

## 4. TEST EQUIPMENT USED

### 4.1. Test Equipment Used to Measure Conducted Disturbance

Table 2 Conducted Disturbance Test Equipment

No.	Equipment	Manufacturer	Model No.	LAST CALIB	Period
SB3319	EMI Test Receiver	R&S	ESCS30	Jan.21,2013	1 Year
SB4357	AMN	R&S	ENV216	Jan.21,2013	1 Year

### 4.2. Test Equipment Used to Measure Radiated Disturbance

Table 3 Radiated Disturbance Test Equipment

No.	Equipment	Manufacturer	Model No.	LAST CALIB	Period
SB3436	EMI Test Receiver	Rohde & Schwarz	ESI26	Jan.21,2013	1 Year
SB5472/02	Bilog Antenna	SCHWARZBECK	VULB9163	Jan.21,2013	1 Year



## 5. CONDUCTED DISTURBANCE TEST

### 5.1. Test Standard and Limit

#### 5.1.1. Test Standard

FCC Part 15: Section 15.107

#### 5.1.2. Test Limit

Table 4 Conducted Disturbance Test Limit (Class B)

Frequency	Power Port limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15MHz ~ 0.5MHz	66~56*	56~46*
0.5MHz ~ 5 MHz	56	46
5 MHz ~ 30MHz	60	50

\* Decreasing linearly with logarithm of the frequency

### 5.2. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions form both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz.

### 5.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

### 5.4. Test Data

The emissions don't show in below are too low against the limits, the test curves are shown in the next page.

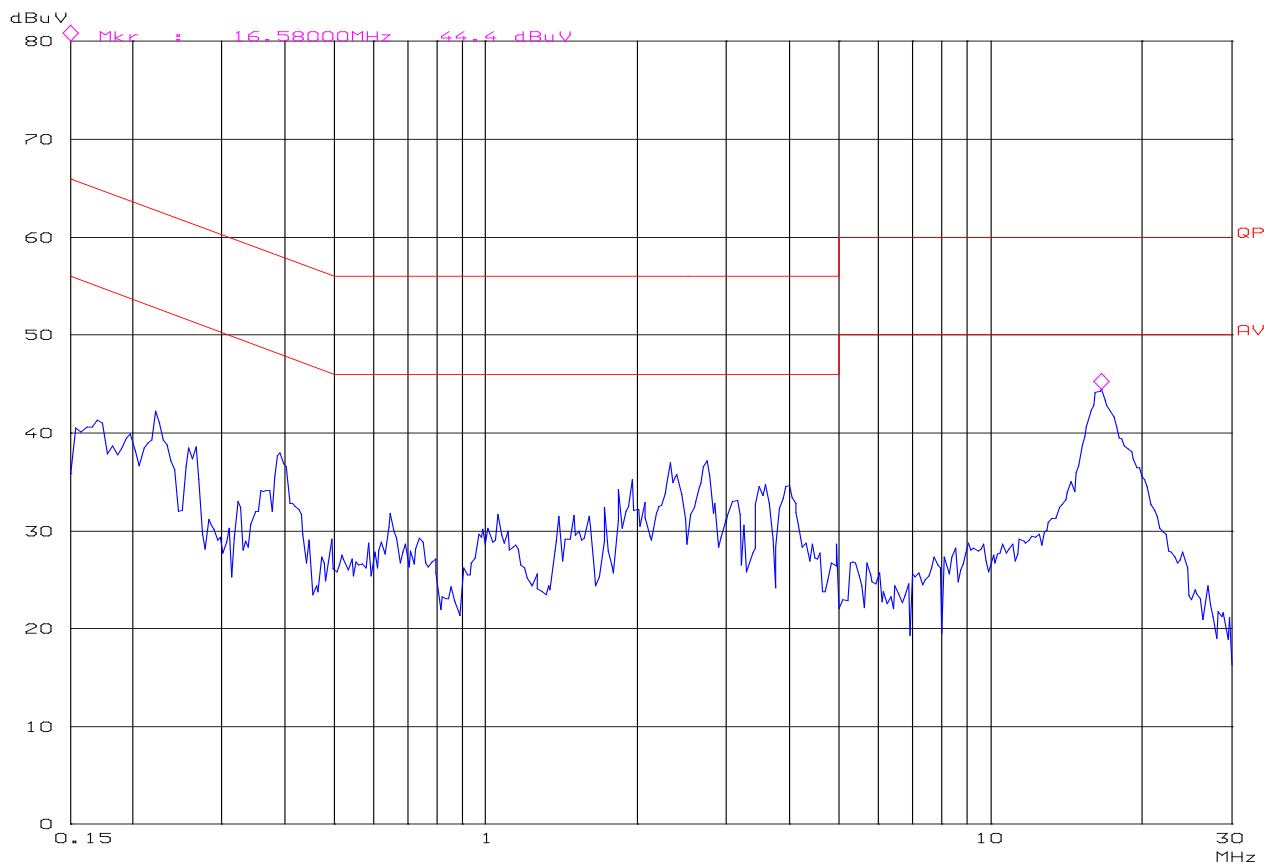
**Table 5 Conducted Disturbance Test Data at mains Port**

Model No.: V5000								
Test mode: Connect to PC								
	Frequency (MHz)	Correction Factor (dB)	Quasi-Peak			Average		
			Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V)	Limits (dB $\mu$ V)	Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V)	Limits (dB $\mu$ V)
Line	0.230	9.7	26.8	36.5	62.4	15.7	25.4	52.4
	0.365	9.7	24.5	34.2	58.6	17.9	27.6	48.6
	2.405	9.9	22.4	32.3	56	13.5	23.4	46
	2.815	9.9	21.5	31.4	56	14.6	24.5	46
	3.995	9.9	20.2	30.1	56	15.2	25.1	46
	16.700	9.9	30.5	40.4	60	24.8	34.7	50
Neutral	0.186	9.7	33.5	43.2	64.2	17.5	27.2	54.2
	0.225	9.7	33.8	43.5	62.6	25.4	35.1	52.6
	0.394	9.7	29.1	38.8	58.0	17.4	27.1	48.0
	1.957	9.8	21.4	31.2	56	17.1	26.9	46
	2.341	9.9	22.3	32.2	56	14.4	24.3	46
	16.210	9.9	31.6	41.5	60	28.9	38.8	50

REMARKS: 1. Emission level(dBuV)=Read Value(dBuV) + Correction Factor(dB)  
 2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)  
 3. The other emission levels were very low against the limit.

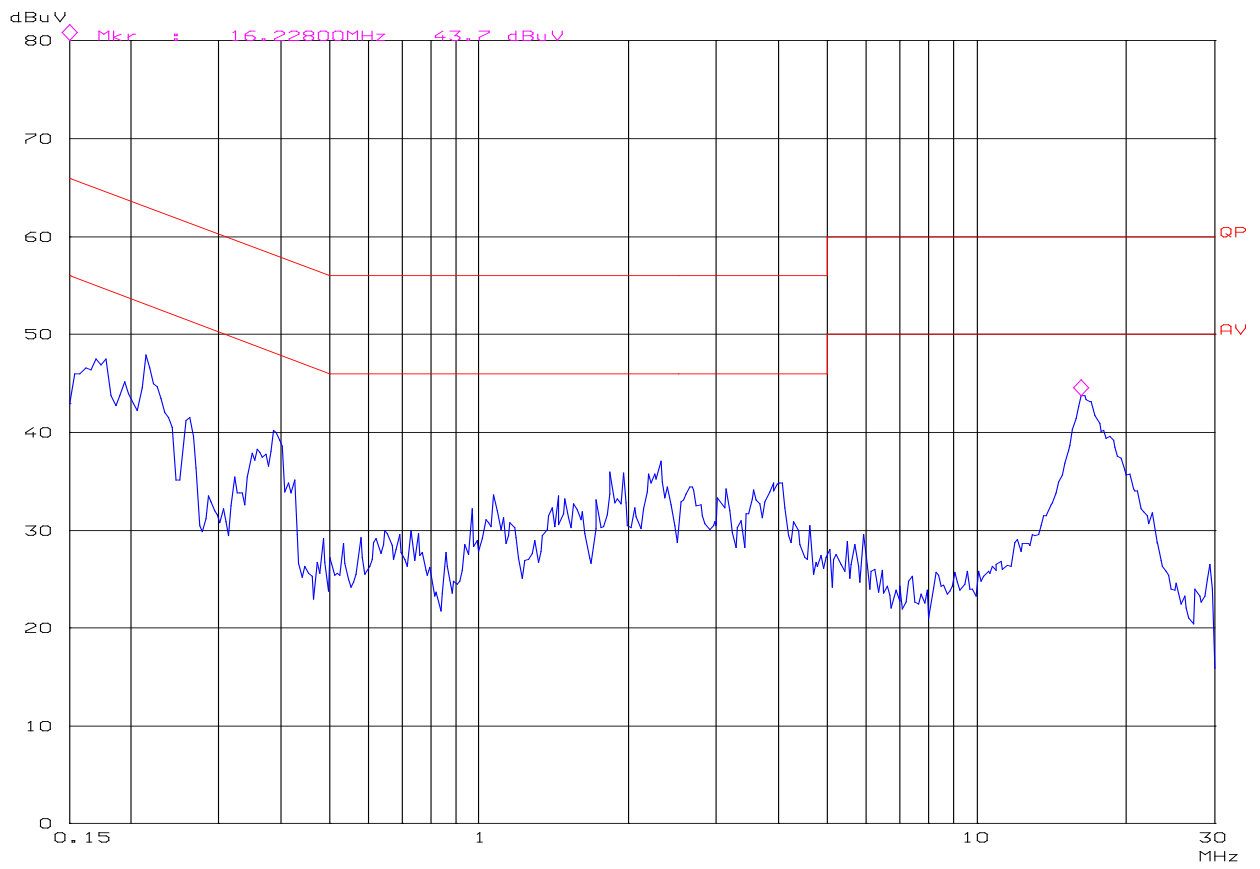
# Conducted Disturbance

EUT: V5000  
Op Cond: Connect to PC  
Test Spec: L  
Comment: AC 120V/60Hz



# Conducted Disturbance

EUT: V5000  
Op Cond: Connect to PC  
Test Spec: N  
Comment: AC 120V/60Hz



## 6. RADIATION DISTURBANCE TEST

### 6.1. Test Standard and Limit

#### 6.1.1. Test Standard

FCC Part 15: Section 15.109

#### 6.1.2. Test Limit

Table 6 Radiation Disturbance Test Limit for FCC (Class B)

Frequency	Limit (dB $\mu$ V/m)
	Quasi-peak Level
30MHz~88MHz	40.0
88MHz~216MHz	43.5
216MHz~960MHz	46.0
>960MHz	54.0

\* The lower limit shall apply at the transition frequency.

\* The test distance is 3m.

### 6.2. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set **3 meters** away from the receiving antenna, which is mounted on an antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

### 6.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

### 6.4. Test Data

The emissions don't show in below are too low against the limits, the test curves are shown in the next page.

Table 7 Radiated Disturbance Test Data

Frequency MHz	Cable Loss(dB)	Antenna Factor(dB)	Readings(dBμV/m)	Level(dBμV/m)	Polarity(H/V)	Turntable Angle(deg)	Antenna Height(m)	Limits(dBμV/m)	Margin(dB)
51.385	0.8	13.3	13.9	28	V	184.0	1.1	40.0	12.0
55.276	0.9	13.0	12.4	26.3	V	156.9	1.0	40.0	13.7
70.823	0.9	8.7	14.6	24.2	V	122.9	1.2	40.0	15.8
166.081	1.5	8.7	15.7	25.9	V	279.2	1.3	43.5	17.6
201.072	1.6	10.6	16.2	28.4	V	280.9	1.3	43.5	15.1
667.598	3.1	18.5	10.8	32.4	V	194.4	1.1	46.0	13.6
55.272	0.8	13.0	19.5	33.3	H	31.3	1.3	40	6.7
191.348	1.7	10.6	17.8	30.1	H	295.8	1.0	43.5	13.4
201.016	1.6	10.6	17.5	29.7	H	227.2	1.1	43.5	13.8
298.262	2.1	12.7	10.7	25.5	H	67.3	1.1	46	20.5
574.294	3.0	16.6	8.0	27.6	H	5.8	1.1	46	18.4
667.602	3.1	18.5	8.9	30.5	H	285.4	1.2	46	15.5

Above 1GHz PK

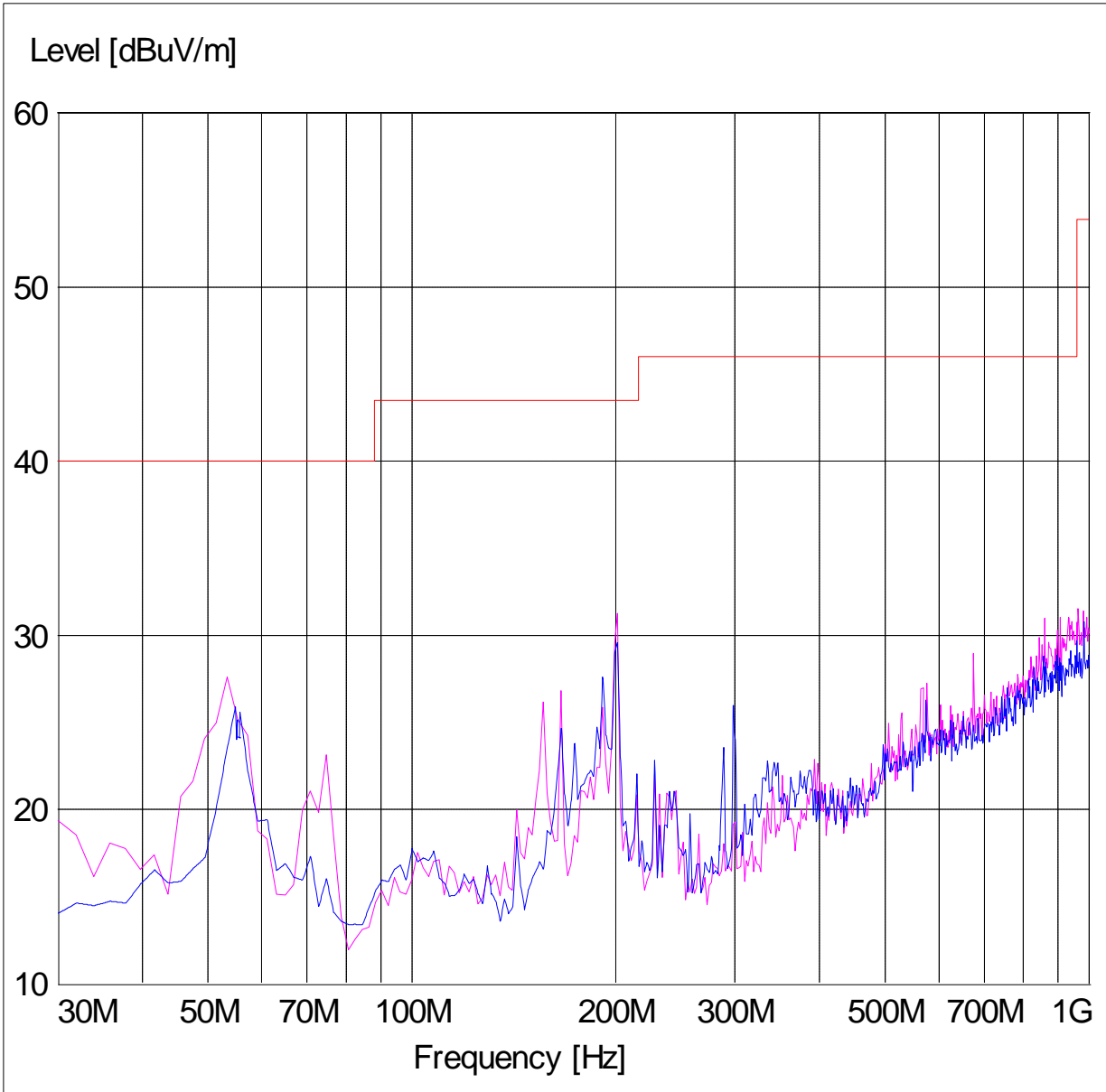
Frequency MHz	Cable Loss+Antenna Factor(dB)	Antenna Factor(dB)	Readings(dBμV/m)	Level(dBμV/m)	Polarity(H/V)	Turntable Angle(deg)	Antenna Height(m)	Limits(dBμV/m)	Margin(dB)
1060.122	-41.1	24.4	54.7	38.0	H	55.2	1.2	74	36.0
1250.502	-41.0	24.3	51.8	35.1	H	208.9	1.2	74	38.9
1691.392	-40.6	26.7	57.1	43.2	H	82.5	1.2	74	30.8
1991.988	-40.4	26.9	50.7	37.2	H	130.6	1.1	74	36.8
3384.769	-38.9	31.7	55.1	47.9	H	167.7	1.1	74	26.1
5088.183	-39.3	34.3	47.7	42.7	H	76.3	1.3	74	31.3
1060.120	-41.1	24.4	51.6	34.9	V	330.3	1.2	74	39.1
1251.009	-41.0	24.3	50.0	33.3	V	228.6	1.2	74	40.7
1691.162	-40.6	26.7	55.4	41.5	V	13.6	1.1	74	32.5
2132.458	-40.5	28.6	46.2	34.3	V	359.7	1.1	74	39.7
3384.318	-38.9	31.7	43.6	36.4	V	343.1	1.2	74	37.6
5088.145	-39.3	34.3	47.6	42.6	V	298.1	1.0	74	31.4

PK level lower than AV limit, AV measurement is omitted

**Radiated Emission**

**SMQ NETC EMC Lab.3m Chamber**

EUT Name: V5000  
Operating Condition: Connect to PC  
Antenna Position: Horizontal & Vertical  
Comment:

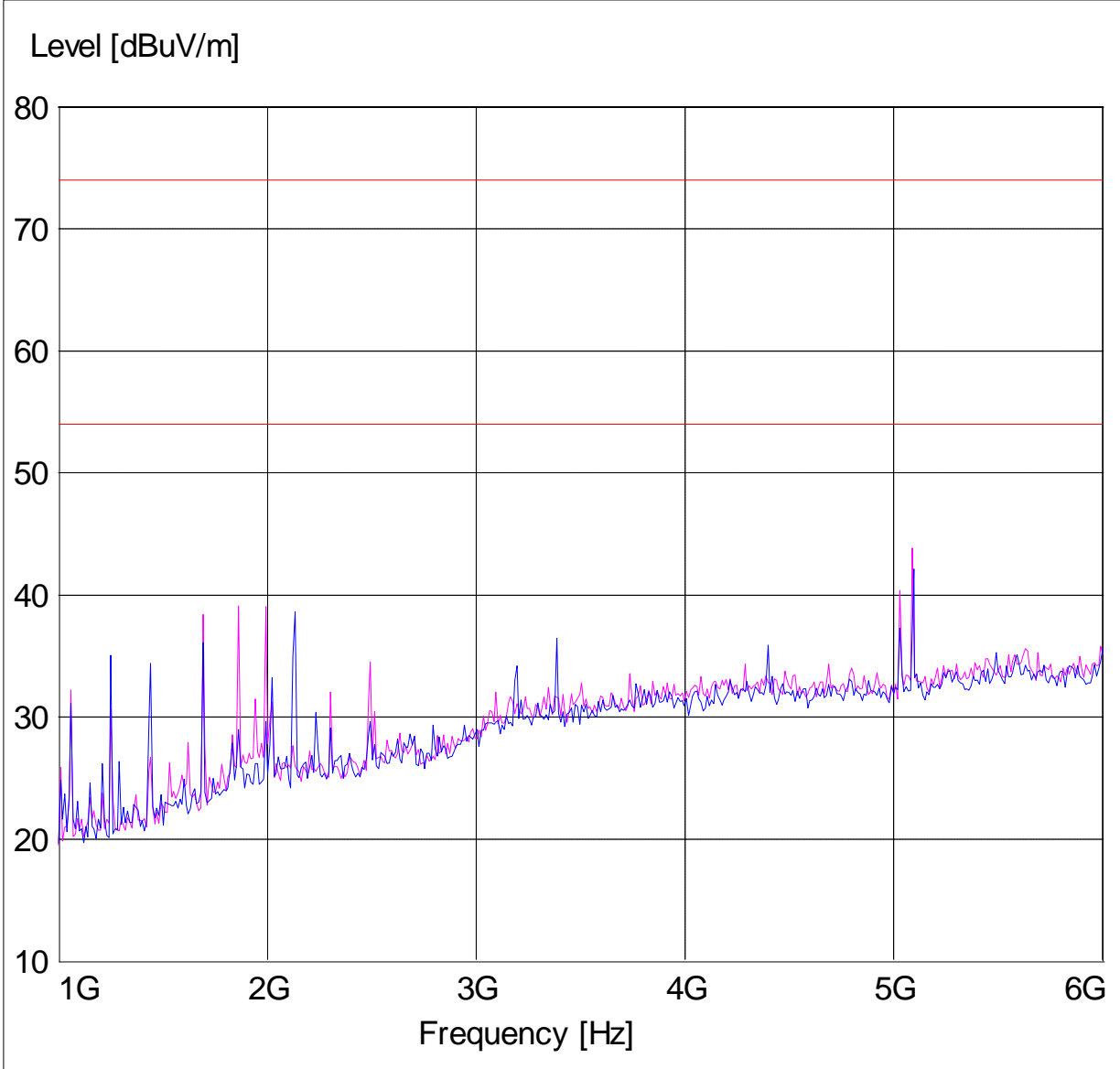


— MES V5000 LH2  
— MES V5000 LV2  
— LIM FCC ClassB F QP      FCC ClassB, field strength

**Radiated Emission**

**SMQ NETC EMC Lab.3m Chamber**

EUT Name: V5000  
Operating Condition: Connect to PC  
Antenna Position: Horizontal & Vertical  
Comment:



- MES V5000 HV2
- MES V5000 HH2
- LIM FCC 15B 1G-18GHz PK FCC ClassB, field strength
- LIM FCC 15B 1G-18GHz AV FCC ClassB, field strength